



City of Annapolis



Water and Sewer Rate Study
Citizen's Advisory Committee Workshop #2
Customer Usage, Cost of Service Analysis
and Rate Alternative Discussion

April 26, 2011

Customers and Consumption Analysis

Current Customers and Consumption

Description	CY08 Water Accounts	CY08 Water Consumption (1,000 gallons)	CY 08 Sewer Accounts	CY 08 Sewer Consumption (1,000 gallons)
Apartment	493	210,941	491	210,636
Bed and Breakfast	25	2,123	25	2,066
Churches	45	5,637	41	4,987
Condominium	489	64,836	91	52,990
County Schools	14	8,902	13	8,126
Gas Stations	20	3,218	17	2,712
Government	30	27,269	27	26,060
Gov't - City/County	10	7,333	9	7,290
Group Home	19	1,721	19	1,731
Hotels and Motels	8	33,294	8	33,294
Housing Authority	144	71,281	68	71,281
Mixed Use	1	172	1	172
Offices	203	29,443	186	26,655
Other - Business	311	76,130	294	66,950
Other Non-Business	22	14,097	18	9,715
Restaurants	86	68,338	75	58,573
Retail	283	43,878	260	40,508
Schools	15	11,897	14	10,972
Single Family Residential	9812	585,183	9,517	555,399
Sub-Meter	15	4,781	-	-
Swimming Pools	27	5,112	23	4,676
Water Systems	96	14,727	2	240
Grand Total	12,168	1,290,313	11,199	1,195,033

Customers and Consumption – Water Analysis

	In Town			Out-of-Town			
Meter Size	Residential	Multi-Family	Non-Residential	Residential	Multi-Family	Non-Residential	Total
5/8 inch	8538	269	621	275	396	63	10162
3/4 inch	68	6	16	1			91
1 inch	911	62	177	12	1	11	1174
1 1/2 inch	5	174	114	1	1	8	303
2 inch	1	173	133			21	328
3 inch		23	32		1	3	59
4 inch		19	24			2	45
6 inch		1	5				6
Grand Total	9,523	727	1,122	289	399	108	12,168

Customers and Consumption – Sewer Analysis

	In Town			Out-of-Town	
Meter Size	Residential	Multi-Family	Non-Residential	Non-Residential	Total
5/8 inch	8,533	218	578	2	9,331
3/4 inch	68	6	15	-	89
1 inch	910	41	154	-	1,105
1 1/2 inch	5	170	98	-	273
2 inch	1	170	122	2	295
3 inch	-	20	31	1	52
4 inch	-	19	24	-	43
6 inch	-	1	5	-	6
Multiple	-	5	-	-	5
Grand Total	9,517	650	1,027	5	11,199

Current Rate Structure

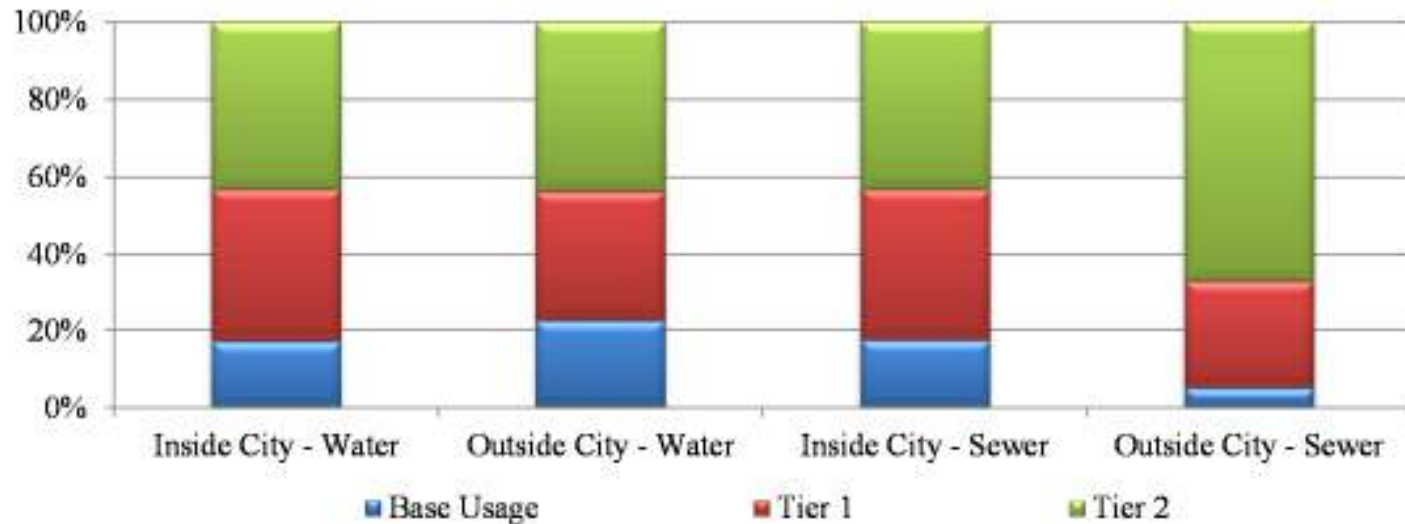
Usage Blocks		Water Rates		Sewer Rates	
		Inside City	Outside City	Inside City	Outside City
Base	Minimum Bill (includes 5,000 gallons)	\$15.60	\$46.80	\$18.19	\$36.38
Tier 1	5,001 – 35,000 gallons Unit Rate per 1,000 gallons	\$2.42 / \$5.32	\$7.26 / \$15.97	\$2.82 / \$5.33	\$5.64 / \$10.66
Tier 2	Over 35,000 gallons Unit Rate per 1,000 gallons	\$2.82 / \$6.20	\$8.46 / \$18.61	\$3.29 / \$6.22	\$6.58 / \$12.44
Naval Academy (all consumption) Unit Rate per 1,000 gallons		-	-	\$2.59	-

*Tier 1 & Tier 2 rates have recently been increased for 2012 and are listed along with previous rates.

Block Usage Analysis - Totals

Tiered Account FY 08 Consumption (in 1,000 gallons)

Usage Blocks		Water Consumption		Sewer Usage*	
		Inside City	Outside City	Inside City	Outside City
Base	Minimum Bill (includes 5,000 gallons)	211,192	12,501	208,570	100
Tier 1	5,001 – 35,000 gallons Unit Rate per 1,000 gallons	491,309	18,879	470,340	543
Tier 2	Over 35,000 gallons Unit Rate per 1,000 gallons	532,161	24,271	514,159	1,321



*Navy sewer usage is not included in total sewer usage shown in the table and chart above.

Block Usage Analysis - Water Consumption by Class

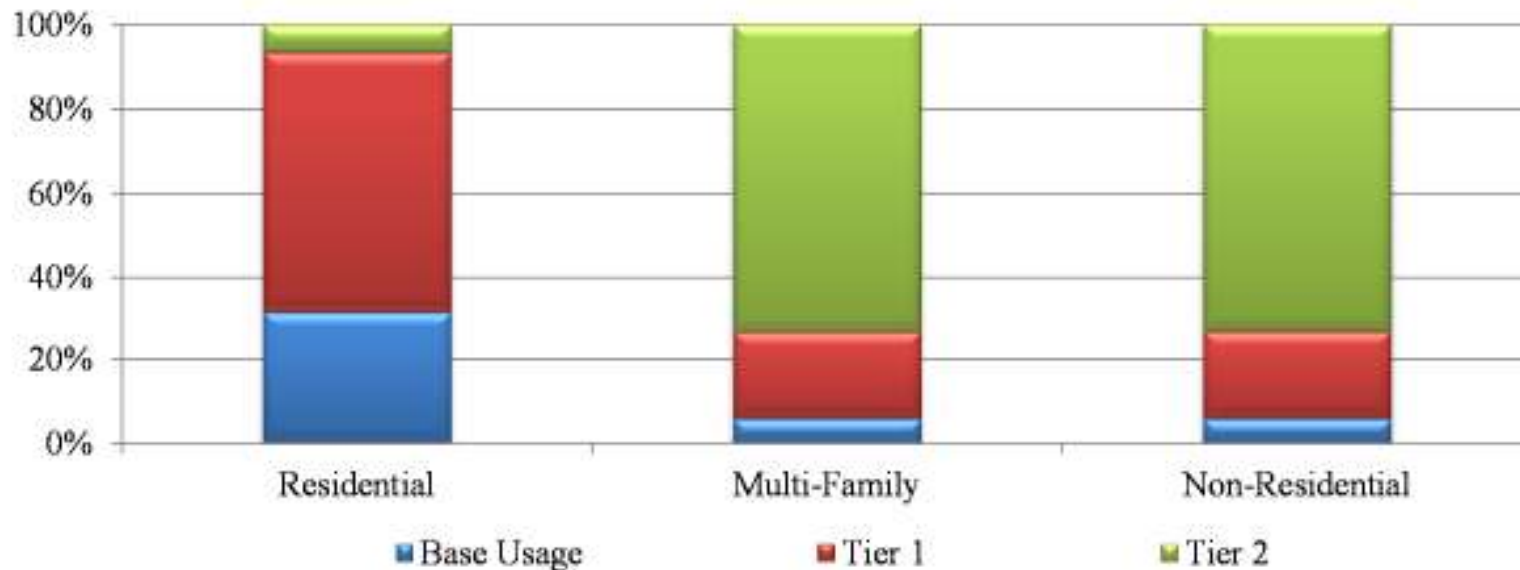
Tiered Account FY 08 Consumption (in 1,000 gallons)

<u>Residential</u>	Q1 (Jan – Mar)	Q2 (Apr – June)	Q3 (July – Sept)	Q4 (Oct – Dec)	Total
Base	45,703	45,602	45,931	45,395	182,631
Tier 1	92,476	87,183	99,494	84,740	363,893
Tier 2	9,033	7,062	13,116	9,448	38,659
Total	147,212	139,847	158,541	139,583	585,183
<u>Multi-Family</u>	Q1 (Jan – Mar)	Q2 (Apr – June)	Q3 (July – Sept)	Q4 (Oct – Dec)	Total
Base	4,890	5,112	5,117	5,009	20,128
Tier 1	18,025	18,165	18,198	17,630	72,018
Tier 2	67,601	67,020	61,194	59,097	254,912
Total	90,516	90,297	84,509	81,736	347,058
<u>Non-Residential</u>	Q1 (Jan – Mar)	Q2 (Apr – June)	Q3 (July – Sept)	Q4 (Oct – Dec)	Total
Base	5,112	5,291	5,345	5,186	20,934
Tier 1	17,817	18,759	19,723	17,978	74,277
Tier 2	63,085	63,006	75,122	61,648	262,861
Total	86,014	87,056	100,190	84,812	358,072

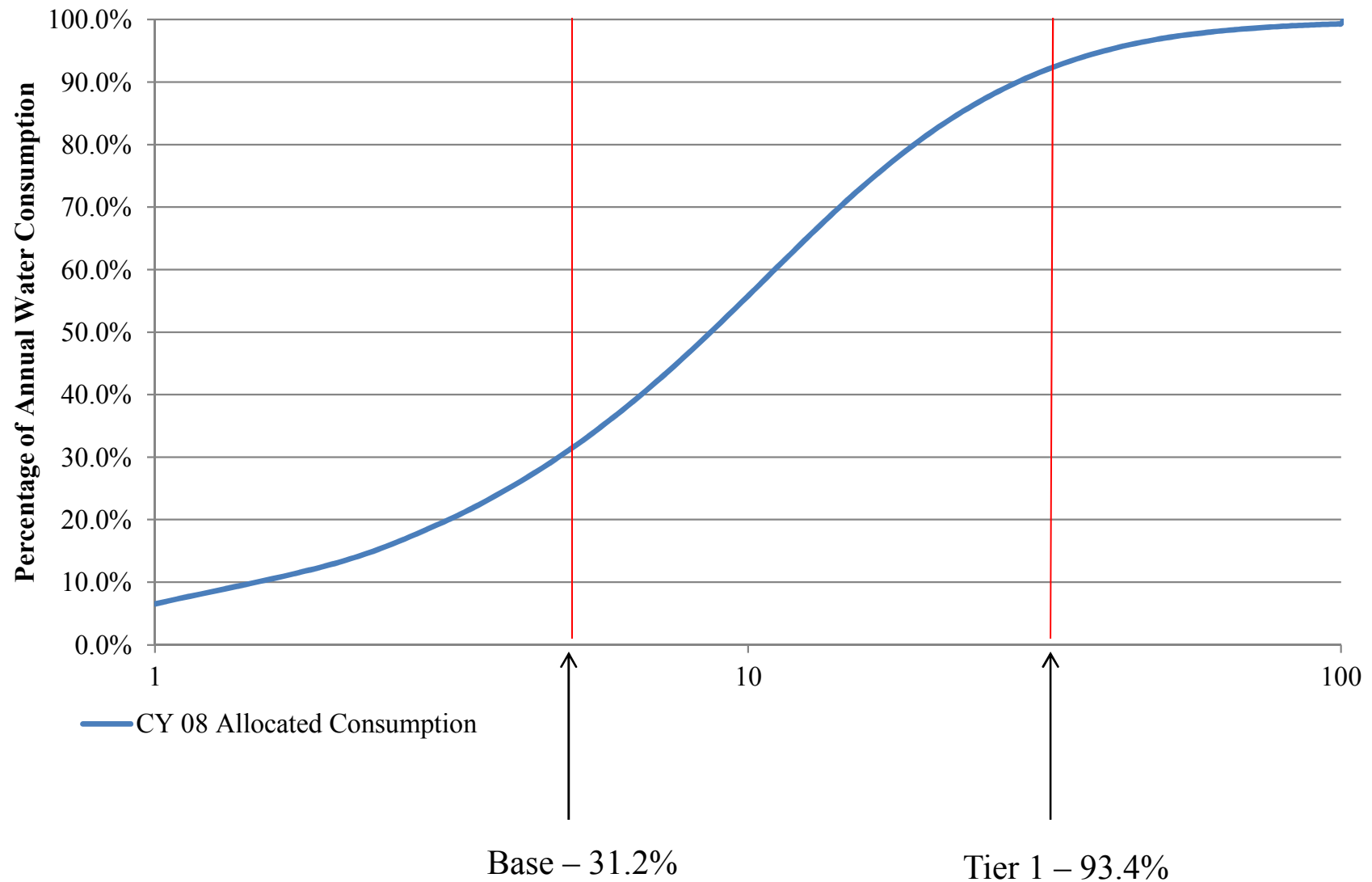
Block Usage Analysis – Water Consumption

Tiered Account FY 08 Consumption (in 1,000 gallons)

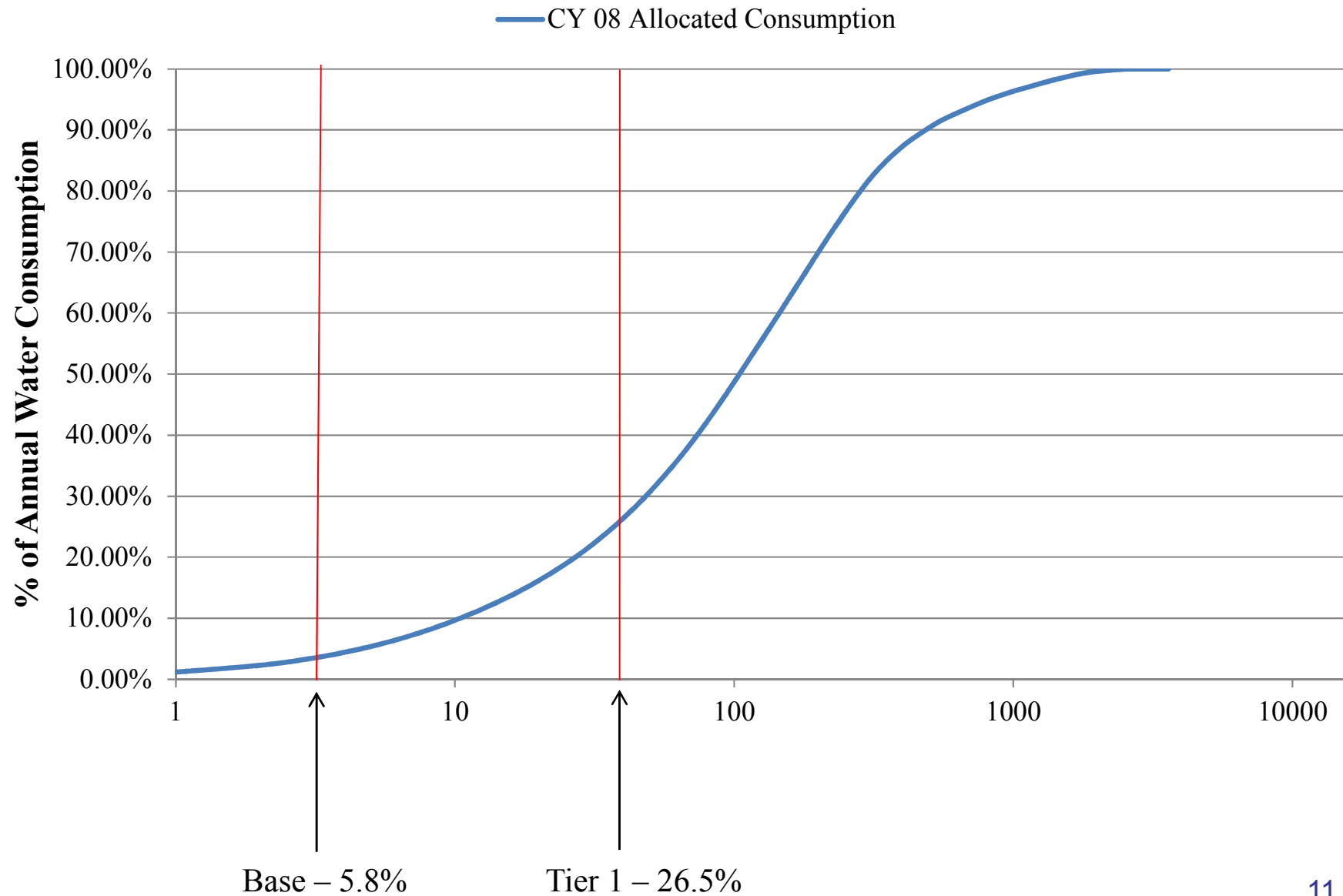
Usage Blocks		Residential	Multi-Family	Non-Residential
Base	Minimum Bill (includes 5,000 gallons)	182,631	20,128	20,934
Tier 1	5,001 – 35,000 gallons Unit Rate per 1,000 gallons	363,893	72,018	74,277
Tier 2	Over 35,000 gallons Unit Rate per 1,000 gallons	38,659	254,912	262,861



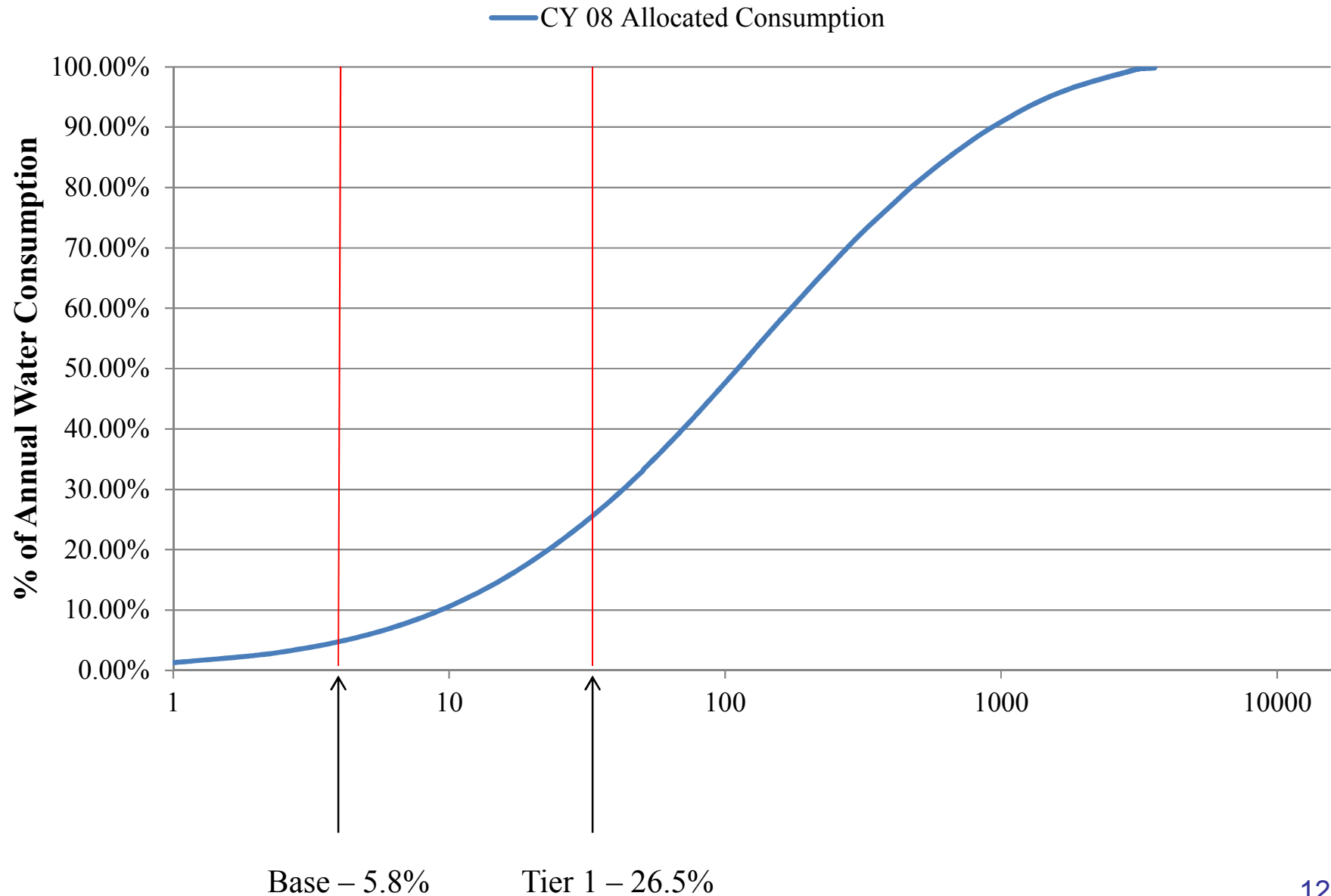
Single Family Residential Analysis



Multi-Family Analysis



Non-Residential Analysis



Customers and Consumption – Sewer Analysis

<u>In-Town</u>	Q1 (Jan – Mar)	Q2 (Apr – June)	Q3 (July – Sept)	Q4 (Oct – Dec)	Total
Base	52,181	52,099	52,424	51,866	208,570
Tier 1	121,277	115,432	122,677	110,954	470,340
Tier 2	133,134	128,127	132,738	120,160	514,159
Total	306,592	295,658	307,839	282,980	1,193,069
<u>Out-of-Town</u>	Q1 (Jan – Mar)	Q2 (Apr – June)	Q3 (July – Sept)	Q4 (Oct – Dec)	Total
Base	25	25	25	25	100
Tier 1	144	138	130	131	543
Tier 2	379	258	364	320	1,321
Total	548	421	519	476	1,964
<u>Naval Academy</u>	Q1 (Jan – Mar)	Q2 (Apr – June)	Q3 (July – Sept)	Q4 (Oct – Dec)	Total
Billed Usage	102,223	68,375	60,754	53,900	285,252

Consumption Analysis Findings

- Based on the consumption period reviews (2008) – there is minimal seasonal peaking among the City’s customers. Naval Academy demonstrated greatest seasonal peaking.
- The current water rate structure does not match the City’s customer class usage patterns (based on typical inclining block rate structure).
 - Only 6.6% of single family residential consumption falls in Tier 2.
 - 76% multi-family and non-residential consumption falls in Tier 2.

Cost of Service Analysis

Cost of Service Approach - Water

Revenue Requirements

Allocation to Functional Categories

Source of Supply	Pumping	Storage	Transmission Distribution	Metering	Administration	Fire Hydrants
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Allocation to Cost Category

Base Capacity	Extra Capacity – Max Day	Extra Capacity – Max Hour	Customer Service	Metering	Fire Protection
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Allocation to Customer Class

Residential	Multi-Family	Non-Residential
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Cost of Service Results - Water Fund

Class	Revenues with FY 11 Rates		Calculated Cost of Service		\$ Change	% Change
Residential	43.21%	\$1,682,279	57.85%	\$2,252,047	\$569,768	14.64%
Multi-Family	26.89%	\$1,046,943	21.05%	\$819,427	(\$227,516)	-5.84%
Non-Residential	29.89%	\$1,163,667	21.10%	\$821,415	(\$342,251)	-8.79%

Class	Revenues with FY 12 Rates		Calculated Cost of Service		\$ Change	% Change
Residential	38.77%	\$2,921,418	57.85%	\$4,359,357	\$1,437,939	19.08%
Multi-Family	28.71%	\$2,163,671	21.05%	\$1,586,190	(\$577,481)	-7.66%
Non-Residential	32.52%	\$2,450,497	21.10%	\$1,590,039	(\$860,458)	-11.42%

Cost of Service Approach - Sewer

Revenue Requirements

Allocation to Functional Categories

Treatment	Pumping	Collection	Metering	Administration
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Allocation to Cost Category

Volume	Suspended Solids	BOD	Total Nitrogen	Customer Service
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Allocation to Customer Class

Residential	Multi-Family	Non-Residential	Naval Academy
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Cost of Service Results – Sewer Fund

Class	Revenues with FY 11 Rates		Calculated Cost of Service		\$ Change	% Change
Residential	38.65%	\$1,771,426	43.81%	\$2,007,920	\$236,494	5.16%
Multi-Family	23.54%	\$1,078,867	20.40%	\$934,907	(\$143,960)	-3.14%
Non-Residential	21.70%	\$994,607	19.08%	\$874,542	(\$120,065)	-2.62%
Naval Academy	16.12%	\$738,803	16.72%	\$766,333	\$27,531	0.60%

Class	Revenues with FY 12 Rates		Calculated Cost of Service		\$ Change	% Change
Residential	37.52%	\$2,731,835	43.81%	\$3,189,580	\$457,745	6.29%
Multi-Family	27.43%	\$1,997,476	20.40%	\$1,485,099	(\$512,378)	-7.04%
Non-Residential	24.90%	\$1,813,095	19.08%	\$1,389,210	(\$423,885)	-5.82%
Naval Academy	10.15%	\$738,803	16.72%	\$1,217,320	\$478,517	6.57%

Rate Structure Alternatives

Rate Structure Goals and Objectives

Goals and Objectives	
Cost of Service Recovery	Minimizing Customer Impacts
Revenue Stability	Affordability
Ease of Updating	Rate Stability
Conservation / Demand Management	Ease of Understanding
Economic Development	Ease of Implementation
Contributions from New Customers	Equitable Cost Allocation
Legality	

Fixed Portion

Two key policy issues related to fixed charge:

1. What costs are recovered from fixed charge:

- Customer service, billing and meter reading
- Administrative costs
- Meter maintenance
- Debt Service

*Higher fixed charge: Pros: guaranteed cash flow, majority of costs are fixed
Cons: hurts small user*

2. Basis used for applying fixed charge:

- Per account
- Meter size
- Equivalent dwelling unit (EDU)

Basis selected should be consistent with costs recovered

Fixed Portion – Goals and Objectives

	Magnitude of Fixed Charge	Basis
Cost of Service Recovery	Higher	Meter Size / EDU
Minimizing Customer Impacts	Lower	Account
Equitable Cost Allocation	Higher	Meter Size / EDU
Revenue Stability	Higher	Meter Size / EDU
Affordability	Lower	Meter Size / EDU
Rate Stability	Higher	Neutral
Ease of Understanding	Neutral	Account
Economic Development	Neutral	Neutral

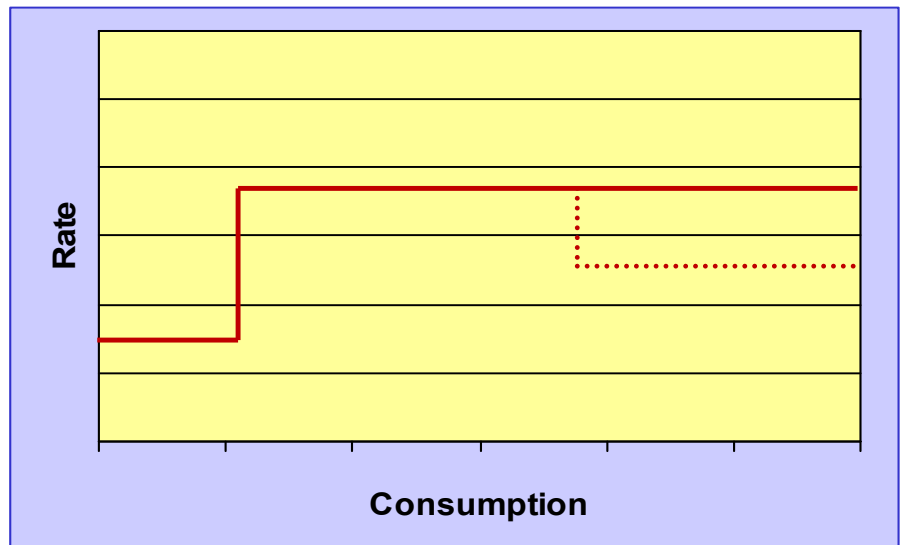
Variable Portion

- The design of the variable portion of the rate structure is largely based on the policies of the Utility.

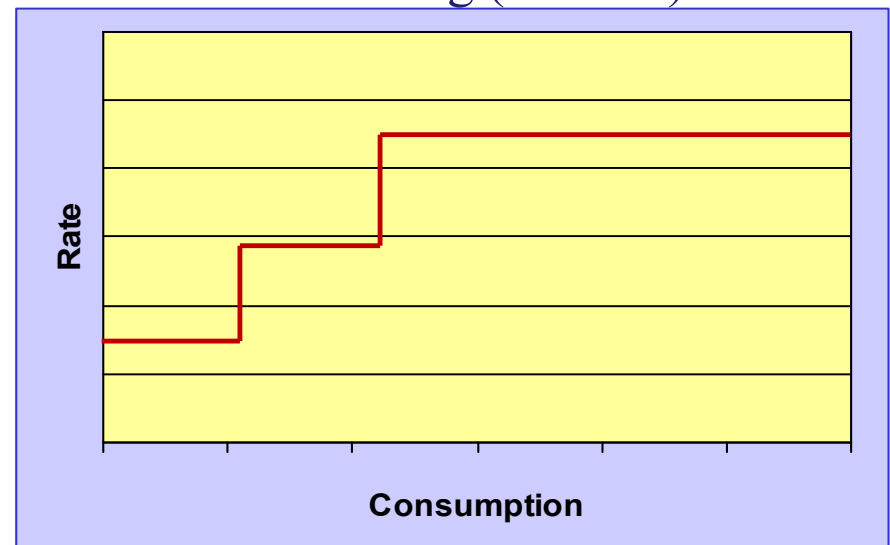
Uniform



Lifeline Block

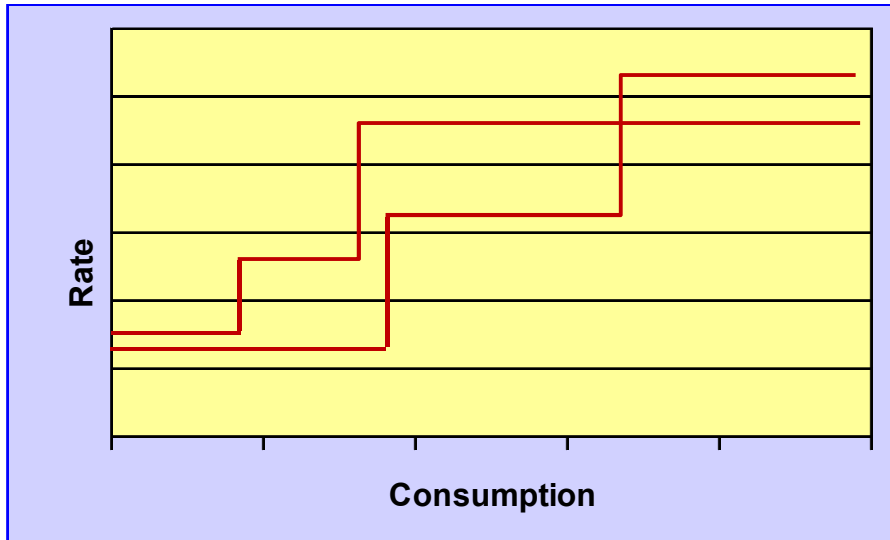


Inclining (Current)

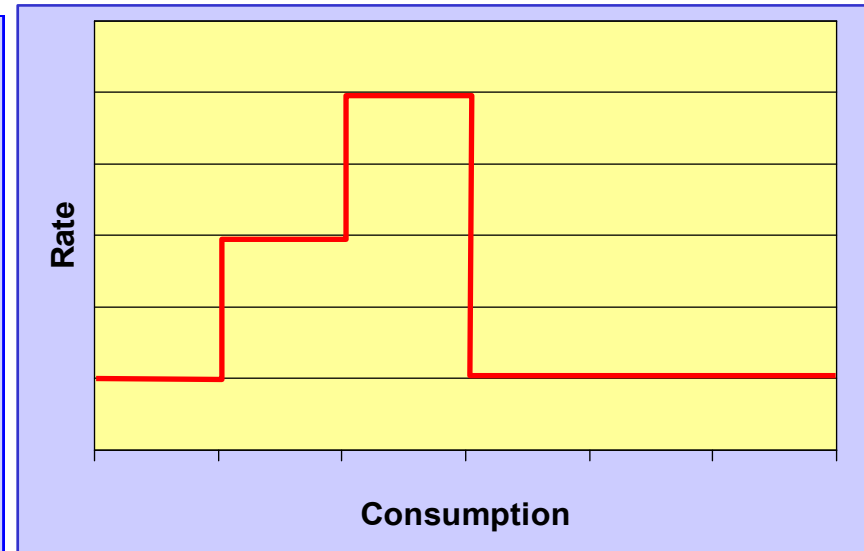


Variable Portion

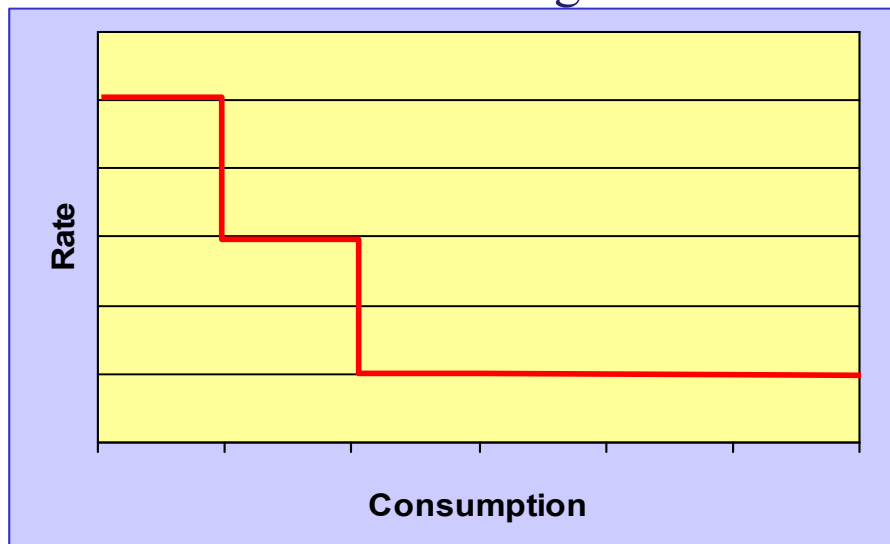
Inclining (Individual)



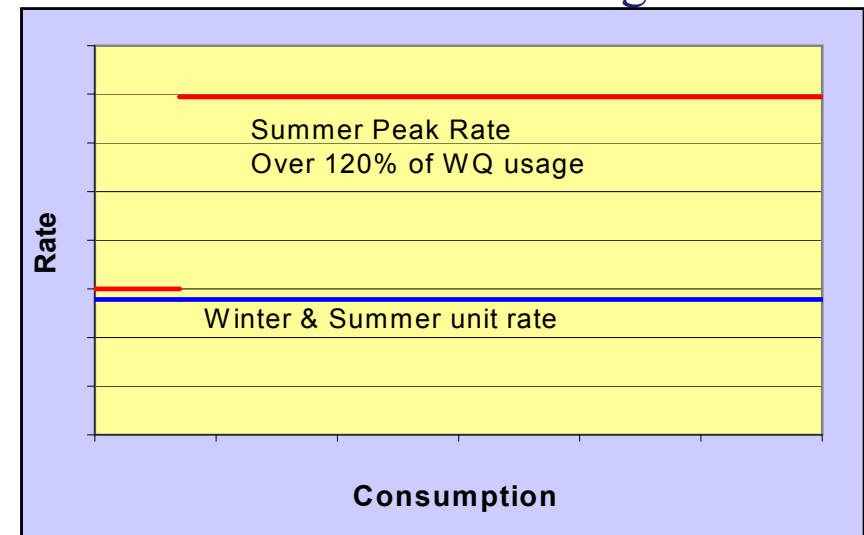
Combination



Declining



Seasonal / Peak Usage



Variable Portion – Goals and Objectives

	Simplicity to Explain and Understand	Promotes Customer Equity	Revenue Stability	Promotes Conservation	Ease of Implementation
Uniform Rates	High	Medium	Medium	Medium	High
Inclining Block	Medium	Medium	Low	High	Medium
Declining Block	Medium	Medium	High	Low	Medium
Combination or Individual Class	Low	High	Medium	Medium	Low
Seasonal	Low	Medium	Low	High	Medium